

CLAIMS

1. A data communications terminal for sequentially transferring frame data to and from another data communications terminal (referred to as receiving terminal) via a data circuit in units of data frames with each data frame amounting to one still picture containing compressed image data of variable length and compressed audio data of variable length, said terminal having a capability to:

transmit a multiplicity (N) of leading data frames with predetermined image and sound qualities and at a predetermined frame rate;

measure data transmission time required for said terminal to transmit a data frame that precedes the current data frame to thereby determine the degree of congestion of said data circuit; and

transmit subsequent data frames with reduced or enhanced image and sound qualities and at a reduced or increased frame rate in accordance with the magnitude of said data transmission time.

2. A data communications terminal for transferring frame data in sequence to and from another data communications terminal (referred to as receiving terminal) via a data circuit in units of data frames with each data frame amounting to a still picture containing compressed image data of variable length and compressed audio data of variable length, said terminal having a capability to:

transmit a multiplicity (N) of leading data frames with predetermined image and sound qualities and at a

predetermined transfer rate;

determine the degree of congestion of said data circuit based on data reception time required for said receiving terminal to receive a data frame that precedes the current data frame; and

transmit subsequent data frames with reduced or enhanced image and sound qualities and at a reduced or increased frame rate in accordance with the magnitude of said data reception time.

3. A data communications terminal for transferring frame data in sequence to and from another data communications terminal (referred to as receiving terminal) via a data circuit in units of data frames with each data frame amounting to a still picture containing compressed image data of variable length and compressed audio data of variable length, said terminal having a capability to:

transmit a multiplicity (N) of leading data frames with predetermined image and sound qualities and at a predetermined frame rate;

determine the degree of congestion of said data circuit based on data transmission time required for said transmitting terminal to send a data frame that precedes the current data frame and data reception time required for said receiving terminal to receive a data frame that precede the current data frame; and

transmit subsequent data frames with reduced or enhance image and sound qualities and at a reduced or raised frame rate in accordance with the magnitudes of the data transmission time and data reception time.

4. The data communications terminal according to any one of claims 1-3, having a further data transfer capability to measure data reception time to receive a sequential data frame transmitted from said receiving terminal and send back the measured data reception time to said receiving terminal.

5. The data communications terminal according to claim 1 or claim 3, wherein said data transmission time is the time interval between the beginning and the end of the transmission of any preceding data frame by said terminal.

6. The data communications terminal according to claim 2, 3, or 4, wherein said data reception time is the time interval between the beginning and the end of the reception of any preceding data frame by said receiving terminal.

7. The data communications terminal according to claim 1 or 5, adapted to:

transmit a next data frame $F(N+1)$ with reduced image and sound qualities and/or at a reduced frame rate based on a determination that the degree of congestion (or availability) of said data circuit has increased (that is, availability has decreased) when the transmission time T_t has increased for the currently receiving data frame F_N as compared with the transmission time for the preceding data frame $F(N-1)$; and

transmit the next data frame $F(N+1)$ with enhanced image and sound qualities and/or at an increased frame rate

based on a determination that degree of congestion has decreased when the transmission time T_t has decreased for the currently receiving data frame FN as compared with the transmission time for the preceding data frame $F(N-1)$.

8. The data communications terminal according to claim 2, 4, or 6, adapted to:

transmit a data frame $F(N+2)$, which is one after the next data frame, with a reduced image and sound qualities and/or at a reduced frame rate based on a determination that the degree of congestion has increased (that is, availability has decreased) when data reception time T_r has increased for the currently transmitting data frame FN as compared with the reception time for the preceding data frame $F(N-1)$; and

transmit the data frame $F(N+2)$ with an increased image and sound qualities and/or at an increased frame rate based on a determination that the degree of congestion has decreased when said data reception time T_r has decreased.

9. The data communications terminal according to any one of claims 3-6, adapted to transmit data frame $F(N+1)$, which is one after the next data frame, with a reduced image and sound qualities and/or at a reduced frame rate based on a determination that the degree of congestion has increased (availability has decreased) when said data reception time T_r for the currently transmitted data frame FN is larger than said data transmission time T_r for the preceding data frame $F(N-1)$, but transmit the data frame $F(N+2)$ with an increased image and sound qualities and/or at an increased

frame rate based on a determination that the degree of congestion has decreased (availability has increased) when said data transfer time has decreased.

10. The data communications terminal according to any one of claims 1, 2, 3, 6, 7, 8, and 9, adapted to prioritize image and sound qualities over frame rate in controlling the image and sound qualities and frame rate based on the degree of congestion (or availability) of said data circuit.

11. The data communications terminal according to any one of claims 1, 2, 3, 6, 7, 8, and 9, adapted to maintain minimum image and sound qualities such that reproduced images and sounds are recognizable when transmitting data frames with reduced image and sound qualities and at a reduced frame rate.

12. The data communications terminal according to any one of claims 1, 2, 3, 6, 7, 8, 9, 10, and 11, wherein image quality is given in terms of compression rate of image data and picture size (which is defined by vertical and horizontal numbers of pixels), and

audio quality is given in terms of compression rate of audio data.